H1784

0057851

EBERLINE SERVICES

June 5, 2002

Ms. Joan Kessner
Bechtel Hanford Inc.
3350 George Washington Way
Richland, WA 99352
MSIN: H0-25

Reference: **P.O. #630**
Eberline Services R2-05-117-7280, SDG H1784

Dear Ms. Kessner:

Enclosed is the data report for one water sample designated under SAF No. B00-056 received at Eberline Services on May 22, 2002. The sample was analyzed according to the accompanying chain-of-custody document.

Please call if you have any questions concerning this report.

Sincerely,

Melissa Mannion

Melissa C. Mannion
Program Manager

MCM

Enclosure: Data Package

RECEIVED
JUN 2002

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AUG 12 2002
EDMC

Analytical Services
2030 Wright Avenue
P.O. Box 4040
Richmond, California 94804-0040
(510) 235-2633 Fax (510) 235-0438
Toll Free (800) 841-5487
www.eberlineservices.com

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1784 was composed of one water sample designated under SAF No. B00-056 with a Project Designation of: 100-NR-1 TSD Sites R.A. Sampling - Water.

The sample was received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on June 5, 2002.

2.0 ANALYSIS NOTES

2.1 Gross Alpha and Gross Beta Analyses

No problems were encountered during the course of the analyses.

2.2 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.3 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.4 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.5 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.6 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.7 Gamma Spectroscopy Analyses

All detected constituents from the gamma spectroscopy analyses have been reported. No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa Mannion
Melissa C. Mannion
Program Manager

June 5, 2002
Date

E B E R L I N E S E R V I C E S / R I C H M O N D
SAMPLE DELIVERY GROUP H1784

SDG 7280
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG_H1784

S U M M A R Y D A T A S E C T I O N

T A B L E O F C O N T E N T S

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Melissa Mannion
Prepared by

Melissa Mannion
Reviewed by

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-TOC
Version 3.06
Report date 06/05/02

EBERLINE SERVICES/RICHMOND

SDG 7280
Contact Melissa C. Mannion

SAMPLE DELIVERY GROUP H1784

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H1784

ABOUT THE DATA SUMMARY SECTION

The Data Summary Section of a Data Package has all data, in several useful orders, necessary for first level, routine review of the data package for a Sample Delivery Group (SDG). This section follows the Data Package Narrative, which has an overview of the data package and a discussion of special problems. It is followed by the Raw Data Section, which has full details.

The Data Summary Section has several groups of reports:

SAMPLE SUMMARIES

The Sample and QC Summary Reports show all samples, including QC samples, reported in one SDG. These reports cross-reference client and lab sample identifiers.

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches (lab groupings reflecting how work was organized) relevant to the reported SDG with information necessary to check the completeness and consistency of the SDG.

WORK SUMMARY

The Work Summary Report shows all samples and work done on them relevant to the reported SDG.

METHOD BLANKS

The Method Blank Reports, one for each Method Blank relevant to the SDG, show all results and primary supporting information for the blanks.

LAB CONTROL SAMPLES

The Lab Control Sample Reports, one for each Lab Control Sample relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/05/02

SDG 7280
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H1784

ABOUT THE DATA SUMMARY SECTION

DUPLICATES

The Duplicate Reports, one for each Duplicate and Original sample pair relevant to the SDG, show all results, differences and primary supporting information for these QC samples.

MATRIX SPIKES

The Matrix Spike Reports, one for each Spiked and Original sample pair relevant to the SDG, show all results, recoveries and primary supporting information for these QC samples.

DATA SHEETS

The Data Sheet Reports, one for each client sample in the SDG, show all results and primary supporting information for these samples.

METHOD SUMMARIES

The Method Summary Reports, one for each test used in the SDG, show all results, QC and method performance data for one analyte on one or two pages. (A test is a short code for the method used to do certain work to the client's specification.)

REPORT GUIDES

The Report Guides, one for each of the above groups of reports, have documentation on how to read the associated reports.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1784

SDG 7280
Contact Melissa C. Mannion

SAMPLE SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1784

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B14MB8	116-N-3, Decon Pad Sump	WATER		R205117-01	B00-056	B00-056-032	05/20/02 08:20
Method Blank		WATER		R205117-03	B00-056		
Lab Control Sample		WATER		R205117-02	B00-056		
Duplicate (R205117-01)	116-N-3, Decon Pad Sump	WATER		R205117-04	B00-056		05/20/02 08:20

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CS
Version 3.06
Report date 06/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1784

QC SUMMARY

SDG 7280
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H1784

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	DAYS SINCE COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7280	B00-056-032	B14M88	WATER		4.0 L		05/22/02	2	R205117-01	7280-001
		Method Blank	WATER						R205117-03	7280-003
		Lab Control Sample	WATER						R205117-02	7280-002
		Duplicate (R205117-01)	WATER		4.0 L		05/22/02	2	R205117-04	7280-004

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-QS
Version 3.06
Report date 06/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1784

PREP BATCH SUMMARY

SDG 7280
Contact Melissa C. Mannion

Client Hanford
Contract No. 630
Case no SDG H1784

TEST	MATRIX	METHOD	PREPARATION BATCH	ERROR 2σ %	PLANCHETS ANALYZED — CLIENT	MORE	RE	BLANK	LCS	DUP/ORIG	MS/ORIG	QUALIFIERS
Alpha Spectroscopy												
AM	WATER	Americium 241 in Water	7036-058	5.0	1			1	1	1/1		
PU	WATER	Plutonium, Isotopic in Water	7036-058	5.0	1			1	1	1/1		
U	WATER	Uranium, Isotopic in Water	7036-058	5.0	1			1	1	1/1		
Beta Counting												
SR	WATER	Total Strontium in Water	7036-058	10.0	1			1	1	1/1		
Gas Proportional Counting												
93A	WATER	Gross Alpha in Water	7036-058	20.0	1			1	1	1/1		
93B	WATER	Gross Beta in Water	7036-058	15.0	1			1	1	1/1		
Gamma Scan												
GAM	WATER	Gamma Emitters	7036-058	15.0	1			1	1	1/1		
Liquid Scintillation Counting												
NI_L	WATER	Nickel-63 in Liquid	7036-058	10.0	1			1	1	1/1		

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.
Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-PBS
Version 3.06
Report date 06/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1784

SDG 7280
Contact Melissa C. Mannion

WORK SUMMARY

Client Hanford
Contract No. 630
Case no SDG H1784

CLIENT SAMPLE ID / LOCATION / CUSTODY	SAF No	MATRIX	LAB SAMPLE ID / COLLECTED / RECEIVED	PLANCHET	TEST	SUF-FIX	ANALYZED	REVIEWED	BY	METHOD
B14MB8			R205117-01	7280-001	93A/93		06/05/02	06/05/02	MCM	Gross Alpha in Water
116-N-3, Decon Pad Sump		WATER	05/20/02	7280-001	93B/93		05/30/02	06/05/02	MCM	Gross Beta in Water
B00-056-032	B00-056		05/22/02	7280-001	AM		05/31/02	06/05/02	MCM	Americium 241 in Water
				7280-001	GAM		05/31/02	06/05/02	MCM	Gamma Emitters
				7280-001	NI_L		05/30/02	06/05/02	MCM	Nickel-63 in Liquid
				7280-001	PU		06/04/02	06/05/02	MCM	Plutonium, Isotopic in Water
				7280-001	SR		05/31/02	06/05/02	MCM	Total Strontium in Water
				7280-001	U		05/29/02	06/05/02	MCM	Uranium, Isotopic in Water
Method Blank			R205117-03	7280-003	93A/93		05/30/02	06/05/02	MCM	Gross Alpha in Water
		WATER		7280-003	93B/93		05/30/02	06/05/02	MCM	Gross Beta in Water
	B00-056			7280-003	AM		05/31/02	06/05/02	MCM	Americium 241 in Water
				7280-003	GAM		05/31/02	06/05/02	MCM	Gamma Emitters
				7280-003	NI_L		05/30/02	06/05/02	MCM	Nickel-63 in Liquid
				7280-003	PU		06/04/02	06/05/02	MCM	Plutonium, Isotopic in Water
				7280-003	SR		05/31/02	06/05/02	MCM	Total Strontium in Water
				7280-003	U		05/29/02	06/05/02	MCM	Uranium, Isotopic in Water
Lab Control Sample			R205117-02	7280-002	93A/93		06/01/02	06/05/02	MCM	Gross Alpha in Water
		WATER		7280-002	93B/93		06/01/02	06/05/02	MCM	Gross Beta in Water
	B00-056			7280-002	AM		05/31/02	06/05/02	MCM	Americium 241 in Water
				7280-002	GAM		05/31/02	06/05/02	MCM	Gamma Emitters
				7280-002	NI_L		05/30/02	06/05/02	MCM	Nickel-63 in Liquid
				7280-002	PU		06/04/02	06/05/02	MCM	Plutonium, Isotopic in Water
				7280-002	SR		05/31/02	06/05/02	MCM	Total Strontium in Water
				7280-002	U		05/29/02	06/05/02	MCM	Uranium, Isotopic in Water
Duplicate (R205117-01)			R205117-04	7280-004	93A/93		06/05/02	06/05/02	MCM	Gross Alpha in Water
116-N-3, Decon Pad Sump		WATER	05/20/02	7280-004	93B/93		05/30/02	06/05/02	MCM	Gross Beta in Water
	B00-056		05/22/02	7280-004	AM		05/31/02	06/05/02	MCM	Americium 241 in Water
				7280-004	GAM		05/31/02	06/05/02	MCM	Gamma Emitters
				7280-004	NI_L		05/30/02	06/05/02	MCM	Nickel-63 in Liquid
				7280-004	PU		06/04/02	06/05/02	MCM	Plutonium, Isotopic in Water
				7280-004	SR		05/31/02	06/05/02	MCM	Total Strontium in Water
				7280-004	U		05/29/02	06/05/02	MCM	Uranium, Isotopic in Water

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CWS
Version 3.06
Report date 06/05/02

SDG 7280
Contact Melissa C. Mannion

WORK SUMMARY, cont.

Client Hanford
Contract No. 630
Case no SDG H1784

COUNTS OF TESTS BY SAMPLE TYPE

TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
93A/93	B00-056	Gross Alpha in Water	900.0_ALPHABETA_GPC	1			1	1	1	4
93B/93	B00-056	Gross Beta in Water	900.0_ALPHABETA_GPC	1			1	1	1	4
AM	B00-056	Americium 241 in Water	AMCMISO_IE_PLATE_AEA	1			1	1	1	4
GAM	B00-056	Gamma Emitters	GAMMA_GS	1			1	1	1	4
NI_L	B00-056	Nickel-63 in Liquid	NI63_LSC	1			1	1	1	4
PU	B00-056	Plutonium, Isotopic in Water	PUISO_PLATE_AEA	1			1	1	1	4
SR	B00-056	Total Strontium in Water	SRTOT_SEP_PRECIP_GPC	1			1	1	1	4
U	B00-056	Uranium, Isotopic in Water	UISO_PLATE_AEA	1			1	1	1	4
TOTALS				8			8	8	8	32

Lab id TMANC
Protocol Hanford
Version Ver 1.0
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EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H1784

R205117-03 **Method Blank**

METHOD BLANK

SDG	7280	Client/Case no	Hanford SDG H1784
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R205117-03	Client sample id	Method Blank
Dept sample id	7280-003	Material/Matrix	WATER
		SAF No	B00-056

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	-0.065	1.1	2.4	3.0	U	93A
Gross Beta	12587-47-2	0.601	3.4	5.9	4.0	U	93B
Nickel 63	13981-37-8	0.946	2.1	3.5	15	U	NI_L
Total Strontium	SR-RAD	-0.320	0.45	0.83	2.0	U	SR
Uranium 233/234	U-233/234	-0.047	0.094	0.36	1.0	U	U
Uranium 235	15117-96-1	0	0.11	0.43	1.0	U	U
Uranium 238	U-238	0	0.094	0.36	1.0	U	U
Plutonium 238	13981-16-3	0	0.084	0.32	1.0	U	PU
Plutonium 239/240	PU-239/240	0.042	0.084	0.32	1.0	U	PU
Americium 241	14596-10-2	0.069	0.14	0.53	1.0	U	AM
Potassium 40	13966-00-2	U		150		U	GAM
Cobalt 60	10198-40-0	U		7.6	25	U	GAM
Cesium 137	10045-97-3	U		7.5	15	U	GAM
Radium 226	13982-63-3	U		14		U	GAM
Radium 228	15262-20-1	U		32		U	GAM
Europium 152	14683-23-9	U		18	50	U	GAM
Europium 154	15585-10-1	U		21	50	U	GAM
Europium 155	14391-16-3	U		23	50	U	GAM
Thorium 228	14274-82-9	U		19		U	GAM
Thorium 232	TH-232	U		32		U	GAM
Uranium 235	15117-96-1	U		32		U	GAM
Uranium 238	U-238	U		930		U	GAM
Americium 241	14596-10-2	U		46		U	GAM

100-NR-1 TSD Sites R.A. Sampling-H2O

QC-BLANK 41962

Lab id	TMANC
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	06/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1784

R205117-02 Lab Control Sample

LAB CONTROL SAMPLE

SDG 7280 Client/Case no Hanford SDG H1784

Contact Melissa C. Mannion Case no No. 630

Lab sample id R205117-02 Client sample id Lab Control Sample

Dept sample id 7280-002 Material/Matrix WATER

SAF No B00-056

ANALYTE	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ADDED pCi/L	2σ ERR pCi/L	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Gross Alpha	208	15	3.0	3.0		93A	215	8.6	97	69-131	70-130
Gross Beta	229	11	8.2	4.0		93B	237	9.5	97	76-124	70-130
Nickel 63	523	9.3	3.5	15		NI_L	552	22	95	84-116	80-120
Total Strontium	97.9	2.9	0.90	2.0		SR	90.4	3.6	108	82-118	80-120
Uranium 233/234	39.2	3.9	1.8	1.0		U	38.6	1.5	102	82-118	80-120
Uranium 235	30.6	3.3	0.44	1.0		U	31.4	1.3	97	82-118	80-120
Uranium 238	42.6	4.1	1.7	1.0		U	42.0	1.7	101	82-118	80-120
Plutonium 238	51.5	4.3	0.30	1.0		PU	54.0	2.2	95	85-115	80-120
Plutonium 239/240	56.3	4.6	0.30	1.0		PU	58.0	2.3	97	85-115	80-120
Americium 241	41.2	4.3	0.45	1.0		AM	42.0	1.7	98	82-118	80-120
Cobalt 60	458	34	26	25		GAM	426	17	108	72-128	80-120
Cesium 137	605	32	25	15		GAM	522	21	116	72-128	80-120

100-NR-1 TSD Sites R.A. Sampling-H2O

QC-LCS 41961

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 06/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1784

R205117-04

B14MB8

DUPLICATE

SDG 7280
Contact Melissa C. Mannion

DUPLICATE
Lab sample id R205117-04
Dept sample id 7280-004

ORIGINAL
Lab sample id R205117-01
Dept sample id 7280-001
Received 05/22/02

Client/Case no Hanford SDG H1784
Case no No. 630

Client sample id B14MB8
Location/Matrix 116-N-3, Decon Pad Sump WATER
Collected/Volume 05/20/02 08:20 4.0 L
Custody/SAF No B00-056-032 B00-056

ANALYTE	DUPLICATE pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST	ORIGINAL pCi/L	2σ ERR (COUNT)	MDA pCi/L	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Gross Alpha	9.66	3.7	3.7	3.0		93A	8.89	3.4	2.9		8	92
Gross Beta	2500	33	6.7	4.0		93B	2520	34	5.6		1	32
Nickel 63	5.98	2.3	3.5	15	J	NI_L	7.25	2.3	3.5	J	19	77
Total Strontium	1370	17	1.7	2.0		SR	1390	17	1.7		1	21
Uranium 233/234	0.185	0.19	0.35	1.0	U	U	0.215	0.32	0.41	U	-	
Uranium 235	0.056	0.11	0.43	1.0	U	U	0.130	0.13	0.50	U	-	
Uranium 238	0.139	0.19	0.35	1.0	U	U	0.108	0.11	0.41	U	-	
Plutonium 238	0.570	0.46	0.63	1.0	U	PU	0.373	0.25	0.32	J	42	167
Plutonium 239/240	2.62	0.82	0.44	1.0		PU	2.81	0.69	0.32		7	60
Americium 241	2.95	1.2	0.75	1.0		AM	2.45	0.94	0.69		19	85
Potassium 40	U		150		U	GAM	U		280	U	-	
Cobalt 60	189	20	16	25		GAM	219	30	17		15	41
Cesium 137	72.7	14	14	15		GAM	76.0	18	20		4	56
Radium 226	U		19		U	GAM	U		28	U	-	
Radium 228	U		53		U	GAM	U		78	U	-	
Europium 152	U		30	50	U	GAM	U		37	U	-	
Europium 154	U		35	50	U	GAM	U		45	U	-	
Europium 155	U		27	50	U	GAM	U		50	U	-	
Thorium 228	U		14		U	GAM	U		20	U	-	
Thorium 232	U		53		U	GAM	U		78	U	-	
Uranium 235	U		36		U	GAM	U		68	U	-	
Uranium 238	U		1600		U	GAM	U		2300	U	-	
Americium 241	U		34		U	GAM	U		98	U	-	

100-NR-1 TSD Sites R.A. Sampling-H2O

QC-DUP#1 41963

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 06/05/02

EBERLINE SERVICES / RICHMOND

SAMPLE DELIVERY GROUP H1784

R205117-01 **B14MB8**

DATA SHEET

SDG 7280 Client/Case no Hanford SDG H1784
Contact Melissa C. Mannion Contract No. 630

Lab sample id R205117-01 Client sample id B14MB8
Dept sample id 7280-001 Location/Matrix 116-N-3, Decon Pad Sump WATER
Received 05/22/02 Collected/Volume 05/20/02 08:20 4.0 L
Custody/SAF No B00-056-032 B00-056

ANALYTE	CAS NO	RESULT pCi/L	2σ ERR (COUNT)	MDA pCi/L	RDL pCi/L	QUALI-FIERS	TEST
Gross Alpha	12587-46-1	8.89	3.4	2.9	3.0		93A
Gross Beta	12587-47-2	2520	34	5.6	4.0		93B
Nickel 63	13981-37-8	7.25	2.3	3.5	15	J	NI_L
Total Strontium	SR-RAD	1390	17	1.7	2.0		SR
Uranium 233/234	U-233/234	0.215	0.32	0.41	1.0	U	U
Uranium 235	15117-96-1	0.130	0.13	0.50	1.0	U	U
Uranium 238	U-238	0.108	0.11	0.41	1.0	U	U
Plutonium 238	13981-16-3	0.373	0.25	0.32	1.0	J	PU
Plutonium 239/240	PU-239/240	2.81	0.69	0.32	1.0		PU
Americium 241	14596-10-2	2.45	0.94	0.69	1.0		AM
Potassium 40	13966-00-2	U		280		U	GAM
Cobalt 60	10198-40-0	219	30	17	25		GAM
Cesium 137	10045-97-3	76.0	18	20	15		GAM
Radium 226	13982-63-3	U		28		U	GAM
Radium 228	15262-20-1	U		78		U	GAM
Europium 152	14683-23-9	U		37	50	U	GAM
Europium 154	15585-10-1	U		45	50	U	GAM
Europium 155	14391-16-3	U		50	50	U	GAM
Thorium 228	14274-82-9	U		20		U	GAM
Thorium 232	TH-232	U		78		U	GAM
Uranium 235	15117-96-1	U		68		U	GAM
Uranium 238	U-238	U		2300		U	GAM
Americium 241	14596-10-2	U		98		U	GAM

100-NR-1 TSD Sites R.A. Sampling-H2O

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-DS
Version 3.06
Report date 06/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1784

Test AM Matrix WATER
SDG 7280
Contact Melissa C. Mannion

METHOD SUMMARY

AMERICIUM 241 IN WATER
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1784

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Americium 241
Preparation batch 7036-058					
B14MB8	R205117-01			7280-001	2.45
BLK (QC ID=41962)	R205117-03			7280-003	U
LCS (QC ID=41961)	R205117-02			7280-002	ok
Duplicate (R205117-01)	R205117-04			7280-004	ok
Nominal values and limits from method				RDLs (pCi/L)	1.0
100-NR-1 TSD Sites R.A. Sampling-H2O					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7036-058	2σ prep error 5.0 %			Reference Lab Notebook 7036 pg. 058												
B14MB8	R205117-01			0.69	0.250			46		110			11	05/31/02	05/31	SS-039
BLK (QC ID=41962)	R205117-03			0.53	0.250			63		110				05/31/02	05/31	SS-055
LCS (QC ID=41961)	R205117-02			0.45	0.250			71		110				05/31/02	05/31	SS-040
Duplicate (R205117-01) (QC ID=41963)	R205117-04			0.75	0.250			44		111			11	05/31/02	05/31	SS-058
Nominal values and limits from method				1.0	0.250			20-105		100	100		180			

PROCEDURES	REFERENCE	AMCMISO_IE_PLATE_AEA
	CP-040	Environmental Water Dissolution, rev 4
	CP-940	Plutonium Separation and Purification, rev 3
	CP-960	Americium-Curium Purification, Large Aliquot, rev 4
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.60 ± 0.28
YIELD 56 ± 26

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 06/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1784

Test PU Matrix WATER
SDG 7280
Contact Melissa C. Mannion

METHOD SUMMARY

PLUTONIUM, ISOTOPIC IN WATER
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1784

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Plutonium 238		Plutonium 239/240
Preparation batch 7036-058							
B14MB8	R205117-01			7280-001	0.373	J	2.81
BLK (QC ID=41962)	R205117-03			7280-003	U		U
LCS (QC ID=41961)	R205117-02			7280-002	ok		ok
Duplicate (R205117-01)	R205117-04			7280-004	ok	U	ok
Nominal values and limits from method 100-NR-1 TSD Sites R.A. Sampling-H2O				RDLs (pCi/L)	1.0		1.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7036-058 2σ prep error 5.0 % Reference Lab Notebook 7036 pg. 058																
B14MB8	R205117-01			0.32	0.250			92		126			15	06/04/02	06/04	SS-003
BLK (QC ID=41962)	R205117-03			0.32	0.250			90		126				06/04/02	06/04	SS-013
LCS (QC ID=41961)	R205117-02			0.30	0.250			101		126				06/04/02	06/04	SS-009
Duplicate (R205117-01) (QC ID=41963)	R205117-04			0.63	0.250			89		126			15	06/04/02	06/04	SS-021
Nominal values and limits from method				1.0	0.250			20-105		100	100		180			

PROCEDURES	REFERENCE	PUISO_PLATE_AEA
	CP-040	Environmental Water Dissolution, rev 4
	CP-940	Plutonium Separation and Purification, rev 3
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.39 ± 0.32
YIELD 93 ± 11

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 06/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1784

Test U Matrix WATER
SDG 7280
Contact Melissa C. Mannion

METHOD SUMMARY

URANIUM, ISOTOPIC IN WATER
ALPHA SPECTROSCOPY

Client Hanford
Contract No. 630
Contract SDG H1784

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	1: Uranium 233/234	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%) 1÷3	2σ	2÷3	2σ
Preparation batch 7036-058											
B14MB8	R205117-01			7280-001	U	U	U				
BLK (QC ID=41962)	R205117-03			7280-003	U	U	U				
LCS (QC ID=41961)	R205117-02			7280-002	ok	ok	ok				
Duplicate (R205117-01)	R205117-04			7280-004	- U	- U	- U				
Nominal values and limits from method				RDLs (pCi/L)	1.0	1.0	1.0	100		4	
100-NR-1 TSD Sites R.A. Sampling-H2O							Averages				

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MAX MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7036-058	2σ prep error 5.0 %	Reference Lab Notebook 7036 pg. 058														
B14MB8	R205117-01			0.50	0.250			80		107			9	05/29/02	05/29	SS-031
BLK (QC ID=41962)	R205117-03			0.43	0.250			94		107				05/29/02	05/29	SS-033
LCS (QC ID=41961)	R205117-02			1.8	0.250			89		107				05/29/02	05/29	SS-032
Duplicate (R205117-01) (QC ID=41963)	R205117-04			0.43	0.250			92		108			9	05/29/02	05/29	SS-039
Nominal values and limits from method				1.0	0.250			30-105		100	100		180			

PROCEDURES	REFERENCE	UISO_PLATE_AEA
	CP-040	Environmental Water Dissolution, rev 4
	CP-910	Uranium Purification, rev 2
	CP-008	Heavy Element Electroplating, rev 6

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 0.79 ± 1.3
YIELD 89 ± 12

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 06/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1784

Test SR Matrix WATER
SDG 7280
Contact Melissa C. Mannion

METHOD SUMMARY

TOTAL STRONTIUM IN WATER
BETA COUNTING

Client Hanford
Contract No. 630
Contract SDG H1784

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Total Strontium
Preparation batch 7036-058					
B14MB8	R205117-01			7280-001	1390
BLK (QC ID=41962)	R205117-03			7280-003	U
LCS (QC ID=41961)	R205117-02			7280-002	ok
Duplicate (R205117-01)	R205117-04			7280-004	ok
Nominal values and limits from method				RDLs (pCi/L)	2.0
100-NR-1 TSD Sites R.A. Sampling-H2O					

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7036-058 2σ prep error 10.0 % Reference Lab Notebook 7036 pg. 058																
B14MB8	R205117-01			1.7	0.250			91		100			11	05/31/02	05/31	GRB-201
BLK (QC ID=41962)	R205117-03			0.83	0.250			89		200				05/31/02	05/31	GRB-222
LCS (QC ID=41961)	R205117-02			0.90	0.250			88		200				05/31/02	05/31	GRB-221
Duplicate (R205117-01) (QC ID=41963)	R205117-04			1.7	0.250			90		100			11	05/31/02	05/31	GRB-204
Nominal values and limits from method				2.0	0.250					100			180			

PROCEDURES REFERENCE SRTOT_SEP_PRECIP_GPC
CP-501 Strontium in Water Samples, rev 2

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 1.3 ± 0.97
YIELD 90 ± 3

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 06/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1784

Test 93A Matrix WATER
SDG 7280
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS ALPHA IN WATER
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1784

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Alpha
Preparation batch 7036-058					
B14MB8	R205117-01	93		7280-001	8.89
BLK (QC ID=41962)	R205117-03	93		7280-003	U
LCS (QC ID=41961)	R205117-02	93		7280-002	ok
Duplicate (R205117-01)	R205117-04	93		7280-004	ok
Nominal values and limits from method 100-NR-1 TSD Sites R.A. Sampling-H2O				RDLs (pCi/L)	3.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7036-058 2σ prep error 20.0 % Reference Lab Notebook 7036 pg. 058																
B14MB8	R205117-01	93		2.9	0.100			29		100			16	05/30/02	06/05	GRB-114
BLK (QC ID=41962)	R205117-03	93		2.4	0.100			22		100				05/30/02	05/30	GRB-111
LCS (QC ID=41961)	R205117-02	93		3.0	0.100			22		100				05/30/02	06/01	GRB-114
Duplicate (R205117-01) (QC ID=41963)	R205117-04	93		3.7	0.100			28		100			16	05/30/02	06/05	GRB-115
Nominal values and limits from method				3.0	0.100			5-250		100			180			

PROCEDURES	REFERENCE	
	900.0_ALPHABETA_GPC	
	CP-060	Soil Preparation, rev 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-170	Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 3

AVERAGES ± 2 SD				
FOR 4 SAMPLES	MDA	3.0	±	1.1
	RESIDUE	25	±	8

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 06/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1784

Test 93B Matrix WATER
SDG 7280
Contact Melissa C. Mannion

METHOD SUMMARY

GROSS BETA IN WATER
GAS PROPORTIONAL COUNTING

Client Hanford
Contract No. 630
Contract SDG H1784

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Gross Beta
Preparation batch 7036-058					
B14MB8	R205117-01	93		7280-001	2520
BLK (QC ID=41962)	R205117-03	93		7280-003	U
LCS (QC ID=41961)	R205117-02	93		7280-002	ok
Duplicate (R205117-01)	R205117-04	93		7280-004	ok
Nominal values and limits from method 100-NR-1 TSD Sites R.A. Sampling-H2O				RDLs (pCi/L)	4.0

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	RESID mg	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7036-058 2σ prep error 15.0 % Reference Lab Notebook 7036 pg. 058																
B14MB8	R205117-01	93		5.6	0.100			29	100				10	05/30/02	05/30	GRB-109
BLK (QC ID=41962)	R205117-03	93		5.9	0.100			22	100					05/30/02	05/30	GRB-111
LCS (QC ID=41961)	R205117-02	93		8.2	0.100			22	100					05/30/02	06/01	GRB-114
Duplicate (R205117-01) (QC ID=41963)	R205117-04	93		6.7	0.100			28	100				10	05/30/02	05/30	GRB-112
Nominal values and limits from method				4.0	0.100			5-250	100				180			

PROCEDURES	REFERENCE	900.0_ALPHABETA_GPC
	CP-060	Soil Preparation, rev 3
	CP-070	Soil Dissolution, < 1.0g Aliquot, rev 4
	CP-170	Soil Preparation for Direct Gross Alpha and Gross Beta Counting, rev 3

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 6.6 ± 2.3
RESIDUE 25 ± 8

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-CMS
Version 3.06
Report date 06/05/02

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1784

Test GAM Matrix WATER
SDG 7280
Contact Melissa C. Mannion

METHOD SUMMARY

GAMMA EMITTERS
GAMMA SCAN

Client Hanford
Contract No. 630
Contract SDG H1784

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Cobalt 60	Cesium 137
Preparation batch 7036-058						
B14MB8	R205117-01			7280-001	219	76.0
BLK (QC ID=41962)	R205117-03			7280-003	U	U
LCS (QC ID=41961)	R205117-02			7280-002	ok	ok
Duplicate (R205117-01)	R205117-04			7280-004	ok	ok
Nominal values and limits from method				RDLs (pCi/L)	25	15
100-NR-1 TSD Sites R.A. Sampling-H2O						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7036-058	2σ prep error 15.0 %	Reference Lab Notebook 7036 pg. 058														
B14MB8	R205117-01			80	0.500					312			11	05/30/02	05/31	MB,05,00
BLK (QC ID=41962)	R205117-03			35	0.500					1069				05/30/02	05/31	MB,05,00
LCS (QC ID=41961)	R205117-02			25	0.500					312				05/30/02	05/31	MB,07,00
Duplicate (R205117-01) (QC ID=41963)	R205117-04			44	0.500					1068			11	05/30/02	05/31	01,03,00
Nominal values and limits from method				15	0.500					100			180			

PROCEDURES REFERENCE GAMMA_GS
CP-100 Ge(Li) Preparation for Commercial Samples, rev 3

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 46 ± 48
YIELD ____ ± ____

Lab id TMANC
Protocol Hanford
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H1784

Test NI L Matrix WATER
SDG 7280
Contact Melissa C. Mannion

METHOD SUMMARY

NICKEL-63 IN LIQUID
LIQUID SCINTILLATION COUNTING

Client Hanford
Contract No. 630
Contract SDG H1784

RESULTS

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	PLANCHET	Nickel 63	
Preparation batch 7036-058						
B14MB8	R205117-01			7280-001	7.25	J
BLK (QC ID=41962)	R205117-03			7280-003	U	
LCS (QC ID=41961)	R205117-02			7280-002	ok	
Duplicate (R205117-01)	R205117-04			7280-004	ok	J
Nominal values and limits from method				RDLs (pCi/L)	15	
100-NR-1 TSD Sites R.A. Sampling-H2O						

METHOD PERFORMANCE

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF-FIX	MDA pCi/L	ALIQ L	PREP FAC	DILU-TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	PREPARED	ANAL-YZED	DETECTOR
Preparation batch 7036-058	2σ prep error 10.0 %			Reference Lab Notebook 7036 pg. 058												
B14MB8	R205117-01			3.5	0.250			96		100			10	05/30/02	05/30	LSC-005
BLK (QC ID=41962)	R205117-03			3.5	0.250			95		100				05/30/02	05/30	LSC-005
LCS (QC ID=41961)	R205117-02			3.5	0.250			96		100				05/30/02	05/30	LSC-005
Duplicate (R205117-01) (QC ID=41963)	R205117-04			3.5	0.250			97		100			10	05/30/02	05/30	LSC-005
Nominal values and limits from method				15	0.250					50			180			

PROCEDURES	REFERENCE	NI63_LSC
	RP-070	Sample Dissolution - HF Method, rev 0
	RP-431	Nickel-63 Purification, rev 0

AVERAGES ± 2 SD FOR 4 SAMPLES
MDA 3.5 ± 0
YIELD 96 ± 2

Lab id TMANC
Protocol Hanford
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SDG 7280
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H1784

SAMPLE SUMMARY

The Sample and QC Summary Reports show all samples, including QC samples, reported in one Sample Delivery Group (SDG).

The Sample Summary Report fully identifies client samples and gives the corresponding lab sample identification. The QC Summary Report shows at the sample level how the lab organized the samples into batches and generated QC samples. The Preparation Batch and Method Summary Reports show this at the analysis level.

The following notes apply to these reports:

* LAB SAMPLE ID is the lab's primary identification for a sample.

* DEPARTMENT SAMPLE ID is an alternate lab id, for example one assigned by a radiochemistry department in a lab.

* CLIENT SAMPLE ID is the client's primary identification for a sample. It includes any sample preparation done by the client that is necessary to identify the sample.

* QC BATCH is a lab assigned code that groups samples to be processed and QCed together. These samples should have similar matrices.

  QC BATCH is not necessarily the same as SDG, which reflects samples received and reported together.

* All Lab Control Samples, Method Blanks, Duplicates and Matrix Spikes are shown that QC any of the samples. Due to possible reanalyses, not all results for all these QC samples may be relevant to the SDG. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

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SDG 7280
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H1784

PREPARATION BATCH SUMMARY

The Preparation Batch Summary Report shows all preparation batches in one Sample Delivery Group (SDG) with information necessary to check the completeness and consistency of the SDG.

The following notes apply to this report:

* The preparation batches are shown in the same order as the Method Summary Reports are printed.

* Only analyses of planchets relevant to the SDG are included.

* Each preparation batch should have at least one Method Blank and LCS in it to validate client sample results.

* The QUALIFIERS shown are all qualifiers other than U, J, B, L and H that occur on any analysis in the preparation batch. The Method Summary Report has these qualifiers on a per sample basis.

  These qualifiers should be reviewed as follows:

  X Some data has been manually entered or modified. Transcription errors are possible.

  P One or more results are 'preliminary'. The data is not ready for final reporting.

  2 There were two or more results for one analyte on one planchet imported at one time. The results in DVD may not be the same as on the raw data sheets.

  Other lab defined qualifiers may occur. In general, these should be addressed in the SDG narrative.

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REPORT GUIDE

Client Hanford
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WORK SUMMARY

The Work Summary Report shows all samples, including QC samples, and all relevant analyses in one Sample Delivery Group (SDG). This report is often useful as supporting documentation for an invoice.

The following notes apply to this report:

* TEST is a code for the method used to measure associated analytes. Results and related information for each analyte are on the Data Sheet Report. In special cases, a test code used in the summary data section is not the same as in associated raw data. In this case, both codes are shown on the Work Summary.

* SUFFIX is the lab's code to distinguish multiple analyses (recounts, reworks, reanalyses) of a fraction of the sample. The suffix indicates which result is being reported. An empty suffix normally identifies the first attempt to analyze the sample.

* The LAB SAMPLE ID, TEST and SUFFIX uniquely identify all supporting data for a result. The Method Summary Report for each TEST has method performance data, such as yield, for each lab sample id and suffix and procedures used in the method.

* PLANCHET is an alternate lab identifier for work done for one test. It, combined with the TEST and SUFFIX, may be the best link to raw data.

* For QC samples, only analyses that directly QC some regular sample are shown. The Lab Control Sample, Method Blank, Duplicate, Matrix Spike and Method Summary Reports detail these relationships.

* The SAS (Special Analytical Services) Number is a client or lab assigned code that reflects special processing for samples, such as rapid turn around. Counts of tests done are lists by SAS number since it is likely to affect prices.

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REPORT GUIDE

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DATA SHEET

The Data Sheet Report shows all results and primary supporting information for one client sample or Method Blank. This report corresponds to both the CLP Inorganics and Organics Data Sheet.

The following notes apply to this report:

* TEST is a code for the method used to measure an analyte. If the TEST is empty, no data is available; the analyte was not analyzed for.

* The LAB SAMPLE ID and TEST uniquely identify work within the Summary Data Section of a Data Package. The Work Summary and Method Summary Reports further identify raw data that underlies this work.

  The Method Summary Report for each TEST has method performance data, such as yield, for each Lab Sample ID and a list of procedures used in the method.

* ERRORs can be labeled TOTAL or COUNT. TOTAL implies a preparation (non-counting method) error has been added, as square root of sum of squares, to the counting error denoted by COUNT. The preparation errors, which may vary by preparation batch, are shown on the Method Summary Report.

* A RESULT can be 'N.R.' (Not Reported). This means the lab did this work but chooses not to report it now, possibly because it was reported at another time.

* When reporting a Method Blank, a RESULT can be 'N.A.' (Not Applicable). This means there is no reported client sample work in the same preparation batch as the Blank's result. This is likely to occur when the Method Blank is associated with reanalyses of selected work for a few samples in the SDG.

The following qualifiers are defined by the DVD system:

U The RESULT is less than the MDA (Minimum Detectable Activity).

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DATA SHEET

If the MDA is blank, the ERROR is used as the limit.

J The RESULT is less than the RDL (Required Detection Limit) and no U qualifier is assigned.

B A Method Blank associated with this sample had a result without a U flag and, after correcting for possibly different aliquots, that result is greater than or equal to the MDA for this sample.

Normally, B is not assigned if U is. When method blank subtraction is shown on this report, B flags are assigned based on the unsubtracted values while U's are assigned based on the subtracted ones. Both flags can be assigned in this case.

For each sample result, all Method Blank results in the same preparation batch are compared. The Method Summary Report documents this and other QC relationships.

L Some Lab Control Sample that QC's this sample had a low recovery. The lab can disable assignment of this qualifier.

H Similar to 'L' except the recovery was high.

P The RESULT is 'preliminary'.

X Some data necessary to compute the RESULT, ERROR or MDA was manually entered or modified.

2 There were two or more results available for this analyte. The reported result may not be the same as in the raw data.

Other qualifiers are lab defined. Definitions should be in the SDG narrative.

The following values are underlined to indicate possible problems:

* An MDA is underlined if it is bigger than its RDL.

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Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
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Case no SDG_H1784

DATA SHEET

* An ERROR is underlined if the 1.645 sigma counting error is bigger than both the MDA and the RESULT, implying that the MDA may not be a good estimate of the 'real' minimum detectable activity.

* A negative RESULT is underlined if it is less than the negative of its 2 sigma counting ERROR.

* When reporting a Method Blank, a RESULT is underlined if greater than its MDA. If the MDA is blank, the 2 sigma counting error is used in the comparison.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/05/02

SDG 7280
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H1784

LAB CONTROL SAMPLE

The Lab Control Sample Report shows all results, recoveries and primary supporting information for one Lab Control Sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. Refer to its Report Guide for details.

* An amount ADDED is the lab's value for the actual amount spiked into this sample with its ERROR an estimate of the error of this amount.

  An amount added is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The error of RESULT, including that introduced by rounding the result prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits for the recovery.

* The recovery is underlined if it is outside either of these ranges.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/05/02

SDG 7280
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H1784

DUPLICATE

The Duplicate Report shows all results, differences and primary supporting information for one Duplicate and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Duplicate and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Duplicate has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* The RPD (Relative Percent Difference) is the absolute value of the difference of the RESULTs divided by their average expressed as a percent.

  If both RESULTs are less than their MDAs, no RPD is computed and a '-' is printed.

  For an analyte, if the lab did work for both samples but has data for only one, the MDA from the sample with data is used as the other's result in the RPD.

* The first, computed limit is the sum, as square root of sum of squares, of the errors of the results divided by the average result as a percent, hence the relative error of the difference rather than the error of the relative difference. The errors include those introduced by rounding the RESULTs prior to printing.

  If this limit is labeled TOT, it includes the preparation error in the RESULTs. If labeled CNT, it does not.

  This value reported for this limit is at most 999.

* The second limit for the RPD is the larger of:

  1. A fixed percentage specified in the protocol.

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Protocol Hanford
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Version 3.06
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SDG 7280
Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H1784

DUPLICATE

2. A protocol factor (typically 2) times the average MDA as a percent of the average result. This limit applies when the results are close to the MDAs.

* The RPD is underlined if it is greater than either limit.

* If specified by the lab, the second limit column is replaced by the Difference Error Ratio (DER), which is the absolute value of the difference of the results divided by the quadratic sum of their one sigma errors, the same errors as used in the first limit.

  Except for differences due to rounding, the DER is the same as the RPD divided by the first RPD limit with the limit scaled to 1 sigma.

* The DER is underlined if it is greater than the sigma factor, typically 2 or 3, shown in the header for the first RPD limit.

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Protocol Hanford
Version Ver 1.0
Form DVD-RG
Version 3.06
Report date 06/05/02

SDG 7280
Contact Melissa C. Mannion

REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG H1784

MATRIX SPIKE

The Matrix Spike Report shows all results, recoveries and primary supporting information for one Matrix Spike and associated Original sample.

The following notes apply to this report:

* All fields in common with the Data Sheet Report have similar usage. This applies both to the Spiked and Original sample data. Refer to the Data Sheet Report Guide for details.

  If the Spike has data for a TEST and the lab did not do this test to the Original, the Original's RESULTs are underlined.

* An amount ADDED is the lab's value for the actual amount spiked into the Spike sample with its ERROR an estimate of the error of this amount.

  An amount is underlined if its ratio to the corresponding RDL is outside protocol specified limits.

* REC (Recovery) is the Spike RESULT minus the Original RESULT divided by ADDED expressed as a percent.

* The first, computed limits for the recovery reflect:

  1. The errors of the two RESULTs, including those introduced by rounding them prior to printing.

     If the limits are labeled (TOTAL), they include preparation error in the result. If labeled (COUNT), they do not.

  2. The error of ADDED.

  3. A lab specified, per analyte bias. The bias changes the center of the computed limits.

* The second limits are protocol defined upper and lower QC limits

Lab id TMANC
Protocol Hanford
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Form DVD-RG
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Contact Melissa C. Mannion

GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H1784

MATRIX SPIKE

for the recovery.

These limits are left blank if the Original RESULT is more than a protocol defined factor (typically 4) times ADDED. This is a way of accounting for that when the spike is small compared to the amount in the original sample, the recovery is unreliable.

* The recovery is underlined (out of spec) if it is outside either of these ranges.

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REPORT GUIDE

Client Hanford
Contract No. 630
Case no SDG_H1784

METHOD SUMMARY

The Method Summary Report has two tables. One shows up to five results measured using one method. The other has performance data for the method. There is one report for each TEST, as used on the Data Sheet Report.

The following notes apply to this report:

* Each table is subdivided into sections, one for each preparation batch. A preparation batch is a group of aliquots prepared at roughly the same time in one work area of the lab using the same method.

  There should be Lab Control Sample and Method Blank results in each preparation batch since this close correspondence makes the QC meaningful. Depending on lab policy, Duplicates need not occur in each batch since they QC sample dependencies such as matrix effects.

* The RAW TEST column shows the test code used in the raw data to identify a particular analysis if it is different than the test code in the header of the report. This occurs in special cases due to method specific details about how the lab labels work.

  The Lab Sample or Planchet ID combined with the (Raw) Test Code and Suffix uniquely identify the raw data for each analysis.

* If a result is less than both its MDA and RDL, it is replaced by just 'U' on this report. If it is greater than or equal to the RDL but less than the MDA, the result is shown with a 'U' flag.

  The J and X flags are as on the data sheet.

* Non-U results for Method Blanks are underlined to indicate possible contamination of other samples in the preparation batch. The Method Blank Report has supporting data.

* Lab Control Sample and Matrix Spike results are shown as: ok, No data, LOW or HIGH, with the last two underlined. 'No data'

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GUIDE, cont.

Client Hanford
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METHOD SUMMARY

means no amount ADDED was specified. 'LOW' and 'HIGH' correspond to when the recovery is underlined on the Lab Control Sample or Matrix Spike Report. See these reports for supporting data.

* Duplicate sample results are shown as: ok, No data, or OUT, with the last two underlined. 'No data' means there was no original sample data found for this duplicate. 'OUT' corresponds to when the RPD is underlined on the Duplicate Report. See this report for supporting data.

* If the MDA column is labeled 'MAX MDA', there was more than one result measured by the reported method and the MDA shown is the largest MDA. If not all these results have the same RDL, the MAX MDA reflects only those results with RDL equal to the smallest one.

  MDAs are underlined if greater than the printed RDL.

* Aliquots are underlined if less than the nominal value specified for the method.

* Prepareation factors are underlined if greater than the nominal value specified for the method.

* Dilution factors are underlined if greater than the nominal value specified for the method.

* Residues are underlined if outside the range specified for the method. Residues are not printed if yields are.

* Yields, which may be gravimetric, radiometric or some type of recovery depending on the method, are underlined if outside the range specified for the method.

* Efficiencies are underlined if outside the range specified for the method. Efficiencies are detector and geometry dependent so this test is only approximate.

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GUIDE, cont.

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METHOD SUMMARY

* Count times are underlined if less than the nominal value specified for the method.

* Resolutions (as FWHM; Full Width at Half Max) are underlined if greater than the method specified limit.

* Tracer drifts are underlined if their absolute values are greater than the method specified limit. Tracer drifts are not printed if percent moistures are.

* Days Held are underlined if greater than the holding time specified in the protocol.

* Analysis dates are underlined if before their planchet's preparation date or, if a limit is specified, too far after it.

For some methods, ratios as percentages and error estimates for them are computed for pairs of results. A ratio column header like '1+3' means the ratio of the first result column and the third result column.

Ratios are not computed for Lab Control Sample, Method Blank or Matrix Spike results since their matrices are not necessarily similar to client samples'.

The error estimate for a ratio of results from one planchet reflects only counting errors since other errors should be correlated. For a ratio involving different planchets, if QC limits are computed based on total errors, the error for the ratio allows for the preparation errors for the planchets.

The ratio is underlined (out of spec) if the absolute value of its difference from the nominal value is greater than its error estimate. If no nominal value is specified, this test is not done.

For Gross Alpha or Gross Beta results, there may be a column showing the sum of other Alpha or Beta emitters. This sum includes all relevant

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GUIDE, cont.

Client Hanford
Contract No. 630
Case no SDG_H1784

METHOD SUMMARY

results in the DVD database, whether reported or not. Results in the sum are weighted by a particles/decay value specified by the lab for each relevant analyte. Results less than their MDA are not included. No sums are computed for Lab Control, Method Blank or Matrix Spike samples since their various planchets may not be physically related.

If a ratio of total isotopic to Gross Alpha or Beta is shown, the error for the ratio reflects both the error in the Gross result and the sum, as square root of sum of squares, of the errors in the isotopic results.

For total elemental uranium or thorium results, there may be a column showing the total weight computed from associated isotopic results. Ignoring results less than their MDAs, this is a weighted sum of the isotopic results. The weights depend on the molecular weight and half-life of each isotope so as to convert activities (decays) to weight (atoms).

If a ratio of total computed to measured elemental uranium or thorium is shown, the error for the ratio reflects the errors in all the measurements.

Lab id TMANC
Protocol Hanford
Version Ver 1.0
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Version 3.06
Report date 06/05/02

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-056-032	Page 1 of 1
Collector R.B. Kerkow	**Company Contact** R.B. Kerkow **Telephone No.** 372-2187	**Project Coordinator** TRENT, SJ	**Price Code** 7c **Data Turnaround**
Project Designation 100-NR-1 TSD Sites R. A. Sampling - Water	**Sampling Location** 116-N-3, Decon Pad Sump (5) H1784 (7280)	**SAF No.** B00-056	**Air Quality** ☐ 15/15
Ice Chest No. SEE OSPC	**Field Logbook No.** EL-1524-1 **COA** R1325N2600	**Method of Shipment** Fed Ex	
Shipped To TMA/~~RECRA~~ RK 5-20-02	**Offsite Property No.** AQ 20152	**Bill of Lading/Air Bill No.** SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
Potentially Radioactive

TIE TO B14MB6

Special Handling and/or Storage
None

Preservation	None	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2			
Type of Container	P	G	G/P	G/P	P	G	P			
No. of Container(s)	1	1	1	1	1	1	(4)			
Volume	100mL	500mL	500mL	500mL	500mL	1000mL	1L			

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	pH (Water) - 9040 RK 5-20-02	See item (1) in Special Instructions. RK 5-20-02	TDS - 160.1 RK 5-20-02	TSS - 160.2 RK 5-20-02	IC Anions - 300.0 (Nitrate, Nitrite, Sulfate) RK 5-20-02	NO2/NO3 - 353.1 RK 5-21-02	See item (2) in Special Instructions.			
B14MB8 ✓	WATER ✓	5-20-02 ✓	0820 ✓							X ✓			

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
RAKuk RB KERKOW	1120 5-20-02	R.T. Thoren	1120 5.20.02
R.T. Thoren	1200 5.20.02	Stored in R&K 3A 3728	1200 5.20.02
Removed by R&K 3A 3728	1000 5.21.02	R.T. Thoren ERC	1000 5.21.02
R.T. Thoren ERC	1000 5.21.02	FEDEX	5-21-02
FED EXPRESS	1630 5-22-02	SCA-2 C. Maester E. MAESTAS	1630 5-22-02
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
Lab COA: R1325N2F00

RT 5-21-02

~~(1) ICP Metals - 6010A (TAL) {Barium, Cadmium, Chromium, Silver}; ICP Metals - 6010A (Add-on) {Arsenic, Lead, Selenium}; Mercury - 7470 - (CV)~~

(2) Gross Alpha; Gross Beta; Gamma Spectroscopy(Water) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Americium-241; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Nickel-63; Isotopic Uranium

Matrix *
S=Soil
SE=Sediment
SO=Solid
S=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
W=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (10/99)

EBERLINE SERVICES **ANALYTICAL SERVICES GROUP**

Richmond, CA Laboratory

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bechtel Hanford Inc. Date/Time received 5-22-02 10:30

CoC No. B00-056-032

Container I.D. No. ER-8 Requested TAT (Days) 15 P.O. Received Yes [ ] No [ ]

INSPECTION

1.	Custody seals on shipping container intact?	Yes [✓]	No [ ]	N/A [ ]
2.	Custody seals on shipping container dated & signed?	Yes [✓]	No [ ]	N/A [ ]
3.	Custody seals on sample containers intact?	Yes [✓]	No [ ]	N/A [ ]
4.	Custody seals on sample containers dated & signed?	Yes [✓]	No [ ]	N/A [ ]
5.	Packing material is:	Wet [ ]	Dry [✓]	
6.	Number of samples in shipping container: 1			
7.	Number of containers per sample: 4X EACH (Or see CoC)			
8.	Paperwork agrees with samples?	Yes [✓]	No [ ]	

9. Samples have: Tape [ ] Hazard labels [ ] Rad labels [ ] Appropriate sample labels [✓]

10. Samples are: In good condition [✓] Leaking [ ] Broken Container [ ] Missing [ ]

11. Describe any anomalies: _____

13. Was P.M. notified of any anomalies? Yes [ ] No [ ] Date _____

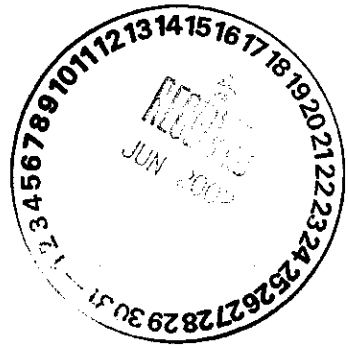
14. Received by E. Maestas Date: 5-22-02 Time: 10:30

Customer Sample No.	cpm	mr/hr	wipe	Customer Sample No.	cpm	mr/hr	wipe

Ion Chamber Ser. No. _____ Calibration date _____

Alpha meter Ser. No. _____ Calibration date _____

Survey Meter Ser. No. _____ Calibration date _____



Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B00-056 H1784

DATE RECEIVED: 05/22/02 LVL LOT # :0205L733

1

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B14MB8						
SILVER, TOTAL	001	W	02L0290	05/20/02	06/04/02	06/06/02
SILVER, TOTAL	001 REP	W	02L0290	05/20/02	06/04/02	06/06/02
SILVER, TOTAL	001 MS	W	02L0290	05/20/02	06/04/02	06/06/02
ARSENIC, TOTAL	001	W	02L0290	05/20/02	06/04/02	06/06/02
ARSENIC, TOTAL	001 REP	W	02L0290	05/20/02	06/04/02	06/06/02
ARSENIC, TOTAL	001 MS	W	02L0290	05/20/02	06/04/02	06/06/02
BARIUM, TOTAL	001	W	02L0290	05/20/02	06/04/02	06/06/02
BARIUM, TOTAL	001 REP	W	02L0290	05/20/02	06/04/02	06/06/02
BARIUM, TOTAL	001 MS	W	02L0290	05/20/02	06/04/02	06/06/02
CADMIUM, TOTAL	001	W	02L0290	05/20/02	06/04/02	06/06/02
CADMIUM, TOTAL	001 REP	W	02L0290	05/20/02	06/04/02	06/06/02
CADMIUM, TOTAL	001 MS	W	02L0290	05/20/02	06/04/02	06/06/02
CHROMIUM, TOTAL	001	W	02L0290	05/20/02	06/04/02	06/06/02
CHROMIUM, TOTAL	001 REP	W	02L0290	05/20/02	06/04/02	06/06/02
CHROMIUM, TOTAL	001 MS	W	02L0290	05/20/02	06/04/02	06/06/02
MERCURY, TOTAL	001	W	02C0147	05/20/02	05/30/02	05/31/02
MERCURY, TOTAL	001 REP	W	02C0147	05/20/02	05/30/02	05/31/02
MERCURY, TOTAL	001 MS	W	02C0147	05/20/02	05/30/02	05/31/02
LEAD, TOTAL	001	W	02L0290	05/20/02	06/04/02	06/06/02
LEAD, TOTAL	001 REP	W	02L0290	05/20/02	06/04/02	06/06/02
LEAD, TOTAL	001 MS	W	02L0290	05/20/02	06/04/02	06/06/02
SELENIUM, TOTAL	001	W	02L0290	05/20/02	06/04/02	06/06/02
SELENIUM, TOTAL	001 REP	W	02L0290	05/20/02	06/04/02	06/06/02
SELENIUM, TOTAL	001 MS	W	02L0290	05/20/02	06/04/02	06/06/02

LAB QC:

SILVER LABORATORY	LC1 BS	W	02L0290	N/A	06/04/02	06/05/02
SILVER, TOTAL	MB1	W	02L0290	N/A	06/04/02	06/05/02
ARSENIC LABORATORY	LC1 BS	W	02L0290	N/A	06/04/02	06/05/02
ARSENIC, TOTAL	MB1	W	02L0290	N/A	06/04/02	06/05/02
BARIUM LABORATORY	LC1 BS	W	02L0290	N/A	06/04/02	06/05/02
BARIUM, TOTAL	MB1	W	02L0290	N/A	06/04/02	06/05/02
CADMIUM LABORATORY	LC1 BS	W	02L0290	N/A	06/04/02	06/05/02
CADMIUM, TOTAL	MB1	W	02L0290	N/A	06/04/02	06/05/02

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B00-056 H1784

DATE RECEIVED: 05/22/02 LVL LOT # :0205L733

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM LABORATORY	LC1 BS	W	02L0290	N/A	06/04/02	06/05/02
CHROMIUM, TOTAL	MB1	W	02L0290	N/A	06/04/02	06/05/02
MERCURY LABORATORY	LC1 BS	W	02C0147	N/A	05/30/02	05/31/02
MERCURY, TOTAL	MB1	W	02C0147	N/A	05/30/02	05/31/02
LEAD LABORATORY	LC1 BS	W	02L0290	N/A	06/04/02	06/05/02
LEAD, TOTAL	MB1	W	02L0290	N/A	06/04/02	06/05/02
SELENIUM LABORATORY	LC1 BS	W	02L0290	N/A	06/04/02	06/05/02
SELENIUM, TOTAL	MB1	W	02L0290	N/A	06/04/02	06/05/02

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B00-056
LVL#: 0205L733
SDG/SAF#: H1784/B00-056

W.O.#: 11343-606-001-9999-00
Date Received: 05-22-02

METALS CASE NARRATIVE

1. This narrative covers the analyses of 1 water sample.

2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary.

3. All analyses were performed within the required holding times.

4. Please refer to the Sample Receipt Check List for sample discrepancies in LvLI's sample acceptance policy.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. The preparation/method blank for 1 analyte was outside method criteria. {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a). The MB result for Lead was greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and all samples read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.

10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

13. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

6/12/02
Date

gmb/m05-733

LVLI
LIONVILLE LABORATORY INC.

METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this Lot#: 020527733

Leaching Procedure: __1310 __1311 __1312 __Other:_____

CLP Metals __ Digestion and __ Analysis Methods: __ILM03.0 __ILM04.0

Metals Digestion Methods: ✓3005A __3010A __3015 __3020A __3050B __3051 __200.7 __SS17
__Other: _____

Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	__6010B	__200.7			__99
Antimony	__6010B __7041 [5]	__200.7 __204.2			__99
Arsenic	✓6010B __7060A [5]	__200.7 __206.2	__3113B		__99
Barium	✓6010B	__200.7			__99
Beryllium	__6010B	__200.7			__99
Bismuth	__6010B [1]	__200.7 [1]		__1620	__99
Boron	__6010B	__200.7			__99
Cadmium	✓6010B __7131A [5]	__200.7 __213.2			__99
Calcium	__6010B	__200.7			__99
Chromium	✓6010B __7191 [5]	__200.7 __218.2			__SS17
Cobalt	__6010B	__200.7			__99
Copper	__6010B __7211 [5]	__200.7 __220.2			__99
Iron	__6010B	__200.7			__99
Lead	✓6010B __7421 [5]	__200.7 __239.2	__3113B		__99
Lithium	__6010B __7430 [4]	__200.7		__1620	__99
Magnesium	__6010B	__200.7			__99
Manganese	__6010B	__200.7			__99
Mercury	✓7470A [3] __7471A [3]	__245.1 [2] __245.5 [2]			__99
Molybdenum	__6010B	__200.7			__99
Nickel	__6010B	__200.7			__99
Potassium	__6010B __7610 [4]	__200.7 __258.1 [4]			__99
Rare Earths	__6010B [1]	__200.7 [1]		__1620	__99
Selenium	✓6010B __7740 [5]	__200.7 __270.2	__3113B		__99
Silicon	__6010B [1]	__200.7		__1620	__99
Silica	__6010B	__200.7		__1620	__99
Silver	✓6010B __7761 [4]	__200.7 __272.2			__99
Sodium	__6010B __7770 [4]	__200.7 __273.1 [4]			__99
Strontium	__6010B	__200.7			__99
Thallium	__6010B __7841 [5]	__200.7 __279.2 __200.9			__99
Tin	__6010B	__200.7			__99
Titanium	__6010B	__200.7			__99
Uranium	__6010B [1]	__200.7 [1]		__1620	__99
Vanadium	__6010B	__200.7			__99
Zinc	__6010B	__200.7			__99
Zirconium	__6010B [1]	__200.7 [1]		__1620	__99

Other: Method:_____

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LCS = Laboratory Control Sample.
NC = Not calculated.

ANALYTICAL METAL METHODS

1. Not included in the method element list.

2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).

3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).

4. Flame AA.

5. Graphite Furnace AA.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/07/02

CLIENT: TNUHANFORD B00-056 H1784 LVL LOT #: 0205L733

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B14MB8	Silver, Total	0.50 u	UG/L	0.50	1.0
		Arsenic, Total	7.3	UG/L	2.5	1.0
		Barium, Total	142	UG/L	0.10	1.0
		Cadmium, Total	0.30 u	UG/L	0.30	1.0
		Chromium, Total	12.4	UG/L	0.50	1.0
		Mercury, Total	0.10 u	UG/L	0.10	1.0
		Lead, Total	63.7	UG/L	1.7	1.0
		Selenium, Total	3.5 u	UG/L	3.5	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/07/02

CLIENT: TNUHANFORD B00-056 H1784 LVL LOT #: 0205L733

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	02L0290-MB1	Silver, Total	0.50 u	UG/L	0.50	1.0
		Arsenic, Total	2.5 u	UG/L	2.5	1.0
		Barium, Total	0.23	UG/L	0.10	1.0
		Cadmium, Total	0.54	UG/L	0.30	1.0
		Chromium, Total	0.62	UG/L	0.50	1.0
		Lead, Total	9.0	UG/L	1.7	1.0
		Selenium, Total	3.5 u	UG/L	3.5	1.0
BLANK1	02C0147-MB1	Mercury, Total	0.10 u	UG/L	0.10	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 06/07/02

CLIENT: TNUHANFORD B00-056 H1784 LVL LOT #: 0205L733

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B14MB8	Silver, Total	48.2	0.50u	50.0	96.4	1.0
		Arsenic, Total	1970	7.3	2000	98.0	1.0
		Barium, Total	2090	142	2000	97.3	1.0
		Cadmium, Total	48.5	0.30u	50.0	97.0	1.0
		Chromium, Total	205	12.4	200	96.2	1.0
		Mercury, Total	0.85	0.10u	1.0	84.7	1.0
		Lead, Total	553	63.7	500	97.8	1.0
		Selenium, Total	1950	3.5 u	2000	97.7	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 06/07/02

CLIENT: TNUHANFORD B00-056 H1784 LVL LOT #: 0205L733

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B14MB8	Silver, Total	0.50u	0.50u	NC	1.0
		Arsenic, Total	7.3	10.1	32.2	1.0
		Barium, Total	142	144	1.3	1.0
		Cadmium, Total	0.30u	0.30u	NC	1.0
		Chromium, Total	12.4	12.7	2.4	1.0
		Mercury, Total	0.10u	0.10u	NC	1.0
		Lead, Total	63.7	65.1	2.2	1.0
		Selenium, Total	3.5 u	3.5 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 06/07/02

CLIENT: TNUHANFORD B00-056 H1784 LVL LOT #: 0205L733

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	02L0290-LC1	Silver, LCS	497	500	UG/L	99.4
		Arsenic, LCS	9680	10000	UG/L	96.8
		Barium, LCS	4920	5000	UG/L	98.4
		Cadmium, LCS	252	250	UG/L	100.7
		Chromium, LCS	507	500	UG/L	101.3
		Lead, LCS	2500	2500	UG/L	99.8
		Selenium, LCS	9740	10000	UG/L	97.4
LCS1	02C0147-LC1	Mercury, LCS	5.1	5.0	UG/L	102.5

Lionville Laboratory Use Only
0205L733

Custody Transfer Record/Lab Work Request

LvLI LIONVILLE LABORATORY INC

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client HANFORD SAF# B00-056
Est. Final Proj. Sampling Date
Project # 11343-606-001-9999-00
Project Contact/Phone #
Lionville Laboratory Project Manager OJ
QC SPEL Del STD TAT 15 days

Date Rec'd 5-22-02 Date Due 6-6-02

	A	B	C	D	E	F
Refrigerator #	6	6	6	6	6	6
#/Type Container Liquid	1AG	1PL	1PL	1PL	1PL	1AG
#/Type Container Solid						
Volume Liquid	500	100	500	500	500	L
Volume Solid						
Preservatives	HNO3	—	—	—	—	H2SO4
ANALYSES REQUESTED	INORG Metal	PH	IC Anions	TDS	TSS	NO2 NO3
Lionville Laboratory Use Only	MRCRATO	IPH	ICNO3 ICNO2 ICSO4	ITDS	ITSS	IN3N2

ORGANIC: VOA, BNA, Pest/PCB, Herb — INORG: Metal, CN

MATRIX CODES: S - Soil; SE - Sediment; SO - Solid; SL - Sludge; W - Water; O - Oil; A - Air; DS - Drum Solids; DL - Drum Liquids; L - EP/TCLP Leachate; WI - Wipe; X - Other; F - Fish

Lab ID	Client ID/Description	MS	MSD	Matrix	Date Collected	Time Collected	MRCRATO	IPH	IC	ITDS	ITSS	IN3N2
001	B14MB8	✓	✓	W	5-20-02	0820	1	1	1	1	1	1

Special Instructions: SAF # B00-056

DATE/REVISIONS:
1. Metals Recd in 500mL A.G.
2. NO2, NO3 ⊥ 1 Liter ⊥
3. PH out of Hold
4.
5.
6.

Lionville Laboratory Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # See Below
2) Ambient or Chilled (circled)
3) Received in Good Condition (Y) or N
4) Samples Properly Preserved (Y) or N
5) Received Within Holding Times Y or (N)

Tamper Resistant Seal was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 2.2 °C

Relinquished by	Received by	Date	Time
Fed Ex	V. Hernandez	5-22-02	1000

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES: 790529371090 PH

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-056-032	Page 1 of 1
Collector R.B. Kerkow	**Company Contact** R.B. Kerkow **Telephone No.** 372-2187	**Project Coordinator** TRENT, SJ	**Price Code** 7c **Data Turnaround** 15/15
Project Designation 100-NR-1 TSD Sites R. A. Sampling - Water	**Sampling Location** 116-N-3, Decon Pad Sump (5)	**SAF No.** B00-056	**Air Quality** ☐
Ice Chest No. SEE OSPC	**Field Logbook No.** EL-1524-1 **COA** R1325N2600	**Method of Shipment** FEDEX	
Shipped To ~~TMA~~/RECRA ~~RT 5-20-02~~	**Offsite Property No.** A # 20139	**Bill of Lading/Air Bill No.** SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
Potentially Radioactive

TIE TO B14MB6

Special Handling and/or Storage
~~None~~ COOL

RT 5.21.02

SAMPLE ANALYSIS

Preservation	None	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2			
Type of Container	P	G	G/P	G/P	P	G	P			
No. of Container(s)	1	1	1	1	1	1	4			
Volume	100mL	500mL	500mL	500mL	500mL	1000mL	1L			
	pH (Water) - 9040	See Item (1) in Special Instructions.	TDS - 160.1	TSS - 160.2	IC Anions - 300.0 (Nitrate, Nitrite, Sulfate)	NO2/NO3 - 353.1	See Item (2) in Special Instructions. RT 5.21.02			

Sample No.	Matrix *	Sample Date	Sample Time										
B14MB8	WATER	5-20-02	0820	X	X	X	X	X	X				

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
RB Kerkow RB KERKOW	1120 5-20-02	R.Thoren	1120 5.20.02
R.Thoren	1200 5.20.02	Storedin 3A 3728	1200 5.20.02
Remaredi 3A 3728 5.21.02	1000	R.Thoren	1000 5.21.02
R.Thoren ERC	1000 5.21.02	FEDEX	Date/Time
ERC	5-22-02 1000	Hernandez	5-22-02 1000
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS
Lab COA: R1325N2F00

(1) ICP Metals - 6010A (TAL) {Barium, Cadmium, Chromium, Silver}; ICP Metals - 6010A (Add-on) {Arsenic, Lead, Selenium}; Mercury - 7470 - (CV)
~~(2) Gross Alpha; Gross Beta; Gamma Spectroscopy(Water) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Americium-241; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Nickel-63; Isotopic Uranium~~

RT 5.21.02

Matrix *
S=Soil
SE=Sediment
SO=Solid
S=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

EE-011 (10/99)

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

CLIENT: HANFORD

Purchase Order/Project:

DATE: 5-22-02

SAF# / SOW# / Release #: B00-056

Laboratory SDG #: 0205L733

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

1. Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
2. Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3. Airbill # recorded?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
4. All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
5. Sample containers are intact?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
6. Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
7. All samples on coc received?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
8. All sample label information matches coc?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
9. Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
10. Shipment meets LvLl Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	☐ Yes	☑ No	☐ N/A	☐ see Comment #
11. Where applicable, bar code labels are affixed to coc?	☐ Yes	☐ No	☑ N/A	☐ see Comment #
12. coc signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
13. coc faxed or emailed to client?	☐ Yes	☐ No	☐ N/A	☐ see Comment #
14. Project Manager/Client contacted concerning discrepancies? (name/date)	☐ Yes	☐ No	☐ N/A	☐ see Comment #

Cooler # / temp and Comments: Metal Rec'd in 500 ml A-G.
RC-020004 2-2 NO2, NO3 ⊥ 1 Cool ⊥
PH out of hold

Laboratory Sample Custodian: Kelli Kennedy

Laboratory Project Manager:

SAMPLE DIGESTION RECORD

SOP: L-SPI-3020 Rev. 00

Digestion Batch #: 0210290
Date/Time Initiated: 06/04/02
Date/Time Completed: 06/04/02
Analyst(s): EMP
Matrix: Soil (Water) Other:
Instr. Type: AA (ICP)
Parameters: See Backlog

(Digested) Undigested (circle one)
Balance #: N/A
Balance Cal Verif: Y (NA)
Hot Plate Temp: 92°C

Method: SW (circle): (3005A), 3010A, 3015, 3020A, 7060A (As/Se), 7760A (Ag), 3050B, 3051
DW: 200.7 (1994), 200.9, 3113B
MCAWW: 200.7 (1982), 200 (AA), 206.2 (As/Se)
SM: 3030C (NC)
CLP: ILMO3.0, ILMO4.0
Other:

TN4/weskem

COC Batch #	Spike Vol(s) (mL)	Initial Wt/Vol (g/mL)	Final Vol (mL)	pH <2	Type: To/So/TC	Texture	Color/Appearance	Artifact	Turb
0205L733-001		100	100	<2	Tot	N/A	Cloudy	N/A	N/A
-001R									
-001S	1.0								
0205L803-001							Clear		
-001R									
-001S	1.0								
0205L778-013									
0205L780-033									
-094									
0205L624-001									
0205L724-001									
0205L725-001									
0210290-MB1				N/A					
-LC1	1.0								

EMP 06-04-02

Spiking IDs:
MS #: 8100-02-05, -06, -07, 6072-48-14
LCS #: 6072-49-05, -06, -07, -08

Reagent IDs:
HNO_3: X08043
HCL: 2612V27066
H_2O_2: 7/06/6/02
1:1 HNO_3: 8728-025-02
1:1 HCL: 8727-025-03

File ID#: IC029001
LIMS Transfer: (Y) N updated
Data Review By/Date: 6/7/02

Lionville Laboratory
Incorporated

MERCURY PREPARATION

Logbook # 8951

Analyst: [signature]
Date 5/30/02
Start Time/Temp: 2115 / 96°C
End Time/Temp: 2315 / 94°C

Instrument ID HG1.1
Balance #: (NA)
Pipette Calibration (Daily) (Y) ___

Prep Batch: 02C0147
Worksheet: HG053111
OP No. ME-7470A, Rev. 00

pH < 2 for Liquids? ✓ Yes __ No (If no: designate affected samples in Comments column, and initiate an SDR)

NOTE: The Initial/Final Volume for water samples = 33mL, unless otherwise noted.
The Final volume for soil samples = 50mL, unless otherwise noted.

LvLI Batch #	Container Number	Spike Volume (mL)	Spike Conc. (µg/L)	Initial Wt. or Volume (g or mL)	Final Sample Volume (mL)	Comments, % Solids, etc.
Blank	711			33mL	33mL	
0.2 µg/L	871	0.0668				
1.0 µg/L	759	0.334				
2.0 µg/L	84	0.668				
5.0 µg/L	881	1.668				
10.0 µg/L	132	3.334				
IW	7	0.0834	2.5			
CW	99	0.168	5.0			
ICB/CCB	75					
MB1	589					PBW147
LCS	108	0.168	5.0			LCSW147
0205L662-002 A	301					
002R	207					
002S	751	0.334	1.0			
002T	56	〃	〃			
0205L799-001 A	941					
001R	704					
001S	701	0.334	1.0			
002	817					
0205L642-006	708					
007	508					
008	220			〃	〃	

Standard:	ID	Prep Date/Time
ICAL/MS	EM-EU32B0530	5/30/02 1500
ICV/CCV/LCS	US-U808A0530	〃

Reviewed By/Date: [signature] 6/03/02

See book # 4529 for std traceability information

Soil LCS = ERA Metals in soil; True Value = 2.48 mg/Kg
Catalogue # 540, Lot # 245

Water Matrix Spiking Solution Concentration= 0.1µg/ml
Water LCS Spiking Concentration: 1.0µg/ml

ME-7470A-C-0801

Lionville Laboratory Incorporated

MERCURY PREPARATION

Logbook # 8951

Analyst: [signature]
Date: 5/30/02
Start Time/Temp: See pg 166B
End Time/Temp:

Instrument ID: HG1.1
Balance #: (NA)
Pipette Calibration (Daily) (Y)

Prep Batch: 02C0147
Worksheet: HG053111
OP No. ME-7470A, Rev. 00

pH < 2 for Liquids? X Yes __ No (If no: designate affected samples in Comments column, and initiate an SDR)

NOTE: The Initial/Final Volume for water samples = 33mL, unless otherwise noted. The Final volume for soil samples = 50mL, unless otherwise noted.

LvLI Batch #	Container Number	Spike Volume (mL)	Spike Conc. (µg/L)	Initial Wt. or Volume (g or mL)	Final Sample Volume (mL)	Comments, % Solids, etc.
02052-733-001 A	90			33ml	33ml	
001R	214					
001S	812	0.334	1.0			
02052-766-001	781					
002	50					
003	116					
004	756					
02052-765-001	K112					RAD
001R	752					

[signature] 5/30/02

Standard:	ID	Prep Date/Time
ICAL/MS		
ICV/CCV/LCS	See pg 166B	

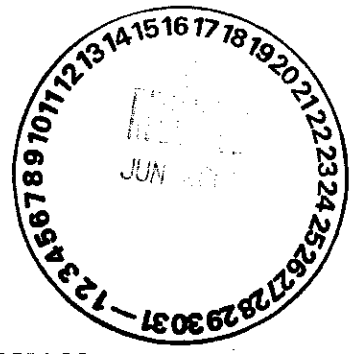
Reviewed By/Date: [signature] 6/03/02

See book # 4527 for std traceability information

Soil LCS = ERA Metals in soil; True Value = 2.48 mg/Kg
Catalogue # 540, Lot # 245

Water Matrix Spiking Solution Concentration= 0.1µg/ml
Water LCS Spiking Concentration: 1.0µg/ml

ME-7470A-C-0801



Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD B00-056 H1784

DATE RECEIVED: 05/22/02 LVL LOT # :0205L733

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS	ANALYSIS TIME
B14MB8							
NITRITE BY IC	001	W	02LICA36	05/20/02	05/24/02	05/24/02	1744
NITRITE BY IC	001 REP	W	02LICA36	05/20/02	05/24/02	05/24/02	1753
NITRITE BY IC	001 MS	W	02LICA36	05/20/02	05/24/02	05/24/02	1803
NITRATE BY IC	001	W	02LICA36	05/20/02	05/24/02	05/24/02	1744
NITRATE BY IC	001 REP	W	02LICA36	05/20/02	05/24/02	05/24/02	1753
NITRATE BY IC	001 MS	W	02LICA36	05/20/02	05/24/02	05/24/02	1803
SULFATE BY IC	001	W	02LICA36	05/20/02	05/24/02	05/24/02	
SULFATE BY IC	001 REP	W	02LICA36	05/20/02	05/24/02	05/24/02	
SULFATE BY IC	001 MS	W	02LICA36	05/20/02	05/24/02	05/24/02	
NITRATE NITRITE	001	W	02LN3033	05/20/02	06/07/02	06/07/02	
NITRATE NITRITE	001 REP	W	02LN3033	05/20/02	06/07/02	06/07/02	
NITRATE NITRITE	001 MS	W	02LN3033	05/20/02	06/07/02	06/07/02	
PH	001	W	02LPH038	05/20/02	05/23/02	05/23/02	1450
PH	001 REP	W	02LPH038	05/20/02	05/23/02	05/23/02	1453
TOTAL DISSOLVED SOLI	001	W	02LSS058	05/20/02	05/24/02	05/24/02	
TOTAL DISSOLVED SOLI	001 REP	W	02LSS058	05/20/02	05/24/02	05/24/02	
TOTAL SUSPENDED SOLI	001	W	02LSS059	05/20/02	05/24/02	05/24/02	
TOTAL SUSPENDED SOLI	001 REP	W	02LSS059	05/20/02	05/24/02	05/24/02	

LAB QC:

NITRITE BY IC	MB1	W	02LICA36	N/A	05/24/02	05/24/02	
NITRITE BY IC	MB1 BS	W	02LICA36	N/A	05/24/02	05/24/02	
NITRATE BY IC	MB1	W	02LICA36	N/A	05/24/02	05/24/02	
NITRATE BY IC	MB1 BS	W	02LICA36	N/A	05/24/02	05/24/02	
SULFATE BY IC	MB1	W	02LICA36	N/A	05/24/02	05/24/02	
SULFATE BY IC	MB1 BS	W	02LICA36	N/A	05/24/02	05/24/02	
NITRATE NITRITE	MB1	W	02LN3033	N/A	06/07/02	06/07/02	
NITRATE NITRITE	MB1 BS	W	02LN3033	N/A	06/07/02	06/07/02	
TOTAL DISSOLVED SOLI	MB1	W	02LSS058	N/A	05/24/02	05/24/02	
TOTAL DISSOLVED SOLI	MB1 BS	W	02LSS058	N/A	05/24/02	05/24/02	
TOTAL DISSOLVED SOLI	MB1 BSD	W	02LSS058	N/A	05/24/02	05/24/02	
TOTAL SUSPENDED SOLI	MB1	W	02LSS059	N/A	05/24/02	05/24/02	
TOTAL SUSPENDED SOLI	MB1 BS	W	02LSS059	N/A	05/24/02	05/24/02	
TOTAL SUSPENDED SOLI	MB1 BSD	W	02LSS059	N/A	05/24/02	05/24/02	

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B00-056 H1784
LVL#: 0205L733

W.O.#: 11343-606-001-9999-00
Date Received: 05-22-02

INORGANIC NARRATIVE

1. This narrative covers the analyses of 1 water sample.

2. The sample was prepared and analyzed in accordance with the methods checked on the attached glossary.

3. Sample holding times as required by the method and/or contract were met with the exception of pH that was received past hold and Nitrate and Nitrite that were analyzed past hold (see the sample chronology summary for analyses times for short hold samples).

4. All results presented in this report are derived form samples that met LvLI's sample acceptance policy with the exception of the discrepancies noted on the Sample Receipt Checklist.

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS were within the 20% Relative Percent Difference (RPD) control limit.

7. The matrix spike recoveries were within the 75-125% control limits.

8. The replicate analyses were within the 20% RPD control limit.

9. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

06-10-02
Date

njp\i05-733

Lionville Laboratory Incorporated

WET CHEMISTRY

METHODS GLOSSARY FOR WATER SAMPLE ANALYSIS

	EPA /600	SW846	OTHER
Acidity	___ 305.1		
___Alkalinity ___Bicarbonate ___Carbonate	___ 310.1		
BOD	___ 405.1		___ 5210B (b)
Ion Chromatography:			
___Bromide ___Chloride ___Fluoride	___ 300.0	___ 9056	
___Nitrate ___Nitrite ___Phosphate	___ 300.0	___ 9056	
___Sulfate ___Formate ___Acetate ___Oxalate	___ 300.0	___ 9056	
Chloride	___ 325.2	___ 9251	
Chorine, Residual	___ 330.5 (mod)		
Cyanide, Amenable to Chlorination	___ 335.2	___ 9010B	
Cyanide, Total	___ 335.2	___ 9010B ___ 9014	___ ILMO4.0 (e)
Cyanide, Weak Acid Dissociable		___	___ 412 (a) ___ 4500CN-I (b)
COD	___ 410.4(mod)		___ 5220C (b)
Color	___ 110.2		
Corrosivity by Coupon		___ 1110(mod)	
Chromium VI		___ 7196A	___ 3500Cr-D (b)
Fluoride	___ 340.2		___ 4500-FC
Hardness, Calcium	___ 215.2		
Hardness, Total	___ 130.2		
Iodide			___ ASTM D19P202 (1)
Surfactant	___ 425.1		
___Nitrate-Nitrite ___Nitrate ___Nitrite	___ 353.2		
Ammonia	___ 350.3		
Total___ Kjeldahl ___ Organic Nitrogen	___ 351.3		
Total___ Organic ___ Inorganic Carbon	___ 415.1	___ 9060	
Oil & Grease	___ 413.1	___ 9070	
___ pH ____ pH; paper	___ 150.1	___ 9040B ___ 9041A	
Petroleum Hydrocarbons, Total Recoverable	___ 418.1		
Phenol	___ 420.1 ___ 420.2	___ 9065 ___ 9066	
___Ortho ___Total Phosphate	___ 365.2		___ 4500-P B ___ C
Salinity			___ 210A (a) ___ 2520 (b)
Settleable Solids	___ 160.5		
Sulfide	___ 376.1	___ 9030B/9034 (acid soluble)	
Reactive ___Cyanide ___Sulfide		___ Section 7.3 (___9014 ___9030B)	
Silica	___ 370.1		
Sulfite	___ 377.1		
Sulfate	___ 375.4	___ 9038	
Specific Conductance	___ 120.1	___ 9050A	
Specific Gravity			___ D5057-90 ___ 213E (a)
Synthetic Precipitation Leach		1312	
Total ___Dissolved ___Suspended ___Solids	160 ___.1	___.2 ___.3	
Total Organic Halides	___ 450.1	___ 9020B	
Turbidity	___ 180.1		
Volatile Solids:			
___Total ___Dissolved ___Suspended	___ 160.4		
Other:		**Method:**	

METHOD REFERENCES AND DATA QUALIFIERS

DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

* = Indicates that the original sample result is greater than 4x the spike amount added.

ABBREVIATIONS

MB = Method or Preparation Blank.
MS = Matrix Spike.
MSD = Matrix Spike Duplicate.
REP = Sample Replicate
LC = Laboratory Control Sample.
NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.

2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).

3. Test Methods for Evaluating Solid Waste (USEPA SW-846).

a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).

b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).

c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).

d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).

e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.

f. Code of Federal Regulations.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/10/02

CLIENT: TNUHANFORD B00-056 H1784 LVL LOT #: 0205L733

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B14MB8	Nitrite by IC	1.25 u	MG/L	1.25	5.0
		Nitrate by IC	1.25 u	MG/L	1.25	5.0
		Sulfate by IC	15.6	MG/L	1.2	5.0
		Nitrate Nitrite	0.15	MG/L	0.020	1.0
		pH	6.8	PH UNIT	0.01	1.0
		Total Dissolved Solids	460	MG/L	25.0	1.0
		Total Suspended Solids	98.5	MG/L	25.0	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/10/02

CLIENT: TNUHANFORD B00-056 H1784 LVL LOT #: 0205L733

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	02LICA36-MB1	Nitrite by IC	0.25 u	MG/L	0.25	1.0
		Nitrate by IC	0.25 u	MG/L	0.25	1.0
		Sulfate by IC	0.25 u	MG/L	0.25	1.0
BLANK10	02LN3033-MB1	Nitrate Nitrite	0.020u	MG/L	0.020	1.0
BLANK10	02LSS058-MB1	Total Dissolved Solids	5.00 u	MG/L	5.00	1.0
BLANK10	02LSS059-MB1	Total Suspended Solids	5.00 u	MG/L	5.00	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 06/10/02

CLIENT: TNUHANFORD B00-056 H1784 LVL LOT #: 0205L733

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B14MB8	Nitrite by IC	22.7	1.25u	25.0	90.6	5.0
		Nitrate by IC	24.0	1.25u	25.0	95.9	5.0
		Sulfate by IC	41.5	15.6	25.0	103.4	5.0
		Nitrate Nitrite	0.64	0.15	0.50	97.2	1.0
BLANK10	02LICA36-MB1	Nitrite by IC	4.95	0.25u	5.00	99.0	1.0
		Nitrate by IC	4.80	0.25u	5.00	95.9	1.0
		Sulfate by IC	4.9	0.25u	5.0	97.6	1.0
BLANK10	02LN3033-MB1	Nitrate Nitrite	0.52	0.02u	0.50	103.0	1.0
BLANK10	02LSS058-MB1	Total Dissolved Solids	100	5.00u	100	100	1.0
		Total Dissolved Solids	103	5.00u	100	103.0	1.0
BLANK10	02LSS059-MB1	Total Suspended Solids	86.4	5.00u	100	86.4	1.0
		Total Suspended Solids	87.3	5.00u	100	87.3	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 06/10/02

CLIENT: TNUHANFORD B00-056 H1784 LVL LOT #: 0205L733

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	02LSS058-MB1	Total Dissolved Solids	100	103.0	3.0
BLANK10	02LSS059-MB1	Total Suspended Solids	86.4	87.3	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 06/10/02

CLIENT: TNUHANFORD B00-056 H1784 LVL LOT #: 0205L733

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B14MB8	Nitrite by IC	1.25u	1.25u	NC	5.0
		Nitrate by IC	1.25u	1.25u	NC	5.0
		Sulfate by IC	15.6	15.5	0.84	5.0
		Nitrate Nitrite	0.15	0.14	10.4	1.0
		pH	6.9	6.8	0.4	1.0
		Total Dissolved Solids	460	450	2.2	1.0
		Total Suspended Solids	98.5	98.5	0.00	1.0

Lionville Laboratory Use Only

0205L733

Custody Transfer Record/Lab Work Request

Page 1 of 1

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

LVLI LIONVILLE LABORATORY, INC.

Client HANFORD SAF# B00-056

Est. Final Proj. Sampling Date

Project # 11340-606-001-9999-00

Project Contact/Phone #

Lionville Laboratory Project Manager OJ

QC SPEL Del STD TAT 15 days

Date Rec'd 5-22-02 Date Due 6-6-02

		A		B	C	D	E	F
Refrigerator #		6		6	6	6	6	6
#/Type Container	Liquid	1AG		1PL	1PL	1PL	1PL	1AG
	Solid							
Volume	Liquid	500		100	500	500	500	L
	Solid							
Preservatives		HNO3		—	—	—	—	H2SO4
ANALYSES REQUESTED →	ORGANIC: VOA / BNA / Pest/PCB / Herb; INORG: Metal / CN				pH	EC RAD/GS	TDS	TSS	NO2 NO3

MATRIX CODES: S - Soil; SE - Sediment; SO - Solid; SL - Sludge; W - Water; O - Oil; A - Air; DS - Drum Solids; DL - Drum Liquids; L - EP/TCLP Leachate; WI - Wipe; X - Other; F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	Lionville Laboratory Use Only: MRCRA TO		TPH	IC NO3 IC NO2 IC SO4	ITDS	ITSS	INO2
001	B14MB8	✓	✓	W	5-20-02	0820	1		1	1	1	1	1

Special Instructions: SAF # B00-056

DATE/REVISIONS:

1. METALS Rec'd in 500mL A.G.
2. NO2, NO3 + 1 Liter +
3. PH out of Hold
4.
5.
6.

Relinquished by	Received by	Date	Time
Fed Ex	V. Herman	5-22-02	1000

Relinquished by	Received by	Date	Time
COMPOSITE WASTE	ORIGINAL REWRITTEN		

Lionville Laboratory Use Only

Samples were: 1) Shipped ___ or Hand Delivered ___ Airbill # See Below; 2) Ambient (Chilled); 3) Received in Good Condition (Y) or N; 4) Samples Properly Preserved (Y) or N; 5) Received Within Holding Times Y or (N)

Tamper Resistant Seal was: 1) Present on Outer Package (Y) or N; 2) Unbroken on Outer Package (Y) or N; 3) Present on Sample (Y) or N; 4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 2.2 °C

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES: 790529371090 PH

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B00-056-032	Page 1 of 1
Collector R.B. Kerkow	**Company Contact** R.B. Kerkow **Telephone No.** 372-2187	**Project Coordinator** TRENT, SJ	**Price Code** 7c **Data Turnaround**
Project Designation 100-NR-1 TSD Sites R. A. Sampling - Water	**Sampling Location** 116-N-3, Decon Pad Sump (5)	**SAF No.** B00-056	**Air Quality** ☐ 15/15
Ice Chest No. SEE OSPC	**Field Logbook No.** EL-1524-1 **COA** R1325N2600	**Method of Shipment** FEDEX	
Shipped To ~~TMA~~/RECRA 5-20-02	**Offsite Property No.** A # 20139	**Bill of Lading/Air Bill No.** SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive

TIE TO B14MB6

Special Handling and/or Storage

~~None~~ COOL

RT 5.21.02

Preservation	None	HNO3 to pH <2	Cool 4C	Cool 4C	Cool 4C	H2SO4 to pH <2 Cool 4C	HNO3 to pH <2			
Type of Container	P	G	G/P	G/P	P	G	P			
No. of Container(s)	1	1	1	1	1	1	4			
Volume	100mL	500mL	500mL	500mL	500mL	1000mL	1L			
SAMPLE ANALYSIS	pH (Water) - 9040	See item (1) in Special Instructions.	TDS - 160.1	TSS - 160.2	IC Anions - 300.0 (Nitrate, Nitrite, Sulfate)	NO2/NO3 - 353.1	See item (2) in Special Instructions. RK 5.21.02			

Sample No.	Matrix *	Sample Date	Sample Time									
B14MB8	WATER	5-20-02	0820	X	X	X	X	X	X			

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By	Date/Time	Received By	Date/Time
RB Kerkow RB KERKOW	1120 5-20-02	R.Thoren	1120 5.20.02
R.Thoren	1200 5.20.02	Storedin	1200 5.20.02
~~Remaining~~ 3A 3728	1000 5.21.02	R.Thoren	1000 5.21.02
R.Thoren	1000 5.21.02	FED EX	
Fed Ex	5.22.02 1000	F Hernandez	5-22-02 1000
Relinquished By	Date/Time	Received By	Date/Time

SPECIAL INSTRUCTIONS

Lab COA: R1325N2F00

(1) ICP Metals - 6010A (TAL) {Barium, Cadmium, Chromium, Silver}; ICP Metals - 6010A (Add-on) {Arsenic, Lead, Selenium}; Mercury - 7470 - (CV)

~~(2) Gross Alpha; Gross Beta; Gamma Spectroscopy(Water) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Americium-241; Isotopic Plutonium; Strontium-89,90 _ Total Sr; Nickel-63; Isotopic Uranium~~

RT 5.21.02

Matrix *

S=Soil
SE=Sediment
SO=Solid
S=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
WI=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

EE-011 (10/99)

LIONVILLE LABORATORY INCORPORATED
SAMPLE RECEIPT CHECKLIST

CLIENT: HANFORD

Purchase Order/Project:

DATE: 5-22-02

SAF# / SOW# / Release #: B00-056

Laboratory SDG #: 0205L733

NOTE: ALL ENTRIES MARKED "NO" MUST BE EXPLAINED IN THE COMMENT SECTION

1.	Custody seals on coolers or shipping container intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
2.	Outside of coolers or shipping containers are free from damage?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
3.	Airbill # recorded?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
4.	All expected paperwork received (coc and other client specific: historical data, alpha/beta or other screening data as applicable)? (paperwork sealed in plastic bag and taped to inside lid)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
5.	Sample containers are intact?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
6.	Custody seals on sample containers intact, signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
7.	All samples on coc received?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
8.	All sample label information matches coc?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
9.	Laboratory QC samples designated on coc? (QC stickers placed on bottles?)	☑ Yes	☐ No	☐ N/A	☐ see Comment #
10.	Shipment meets LvLI Sample Acceptance Policy? (identify all bottles not within policy. See reverse side for policy)	~~☑ Yes~~	☑ No	☐ N/A	☐ see Comment # (1)
11.	Where applicable, bar code labels are affixed to coc?	☐ Yes	☐ No	☑ N/A	☐ see Comment #
12.	coc signed and dated?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
13.	coc faxed or emailed to client?	☑ Yes	☐ No	☐ N/A	☐ see Comment #
14.	Project Manager/Client contacted concerning discrepancies? (name/date)	☐ Yes	☐ No	☑ N/A	☐ see Comment #

Cooler # / temp and Comments: Metal Rec'd in 500 ml A-G.

ERC-020004 2-2

NO2, NO3 ⊥ 1 Cold ⊥

(1) PH out of hold.

Laboratory Sample Custodian: [signature]

Laboratory Project Manager: